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To: Hanchett, James (DPH)
Subject: Separation Science Applications Update



FEATURED APPLICATION

Determination of Pesticides in Lemon Oil via Modified QuEChERS Method

Agilent



Cultivation of citrus crops commonly involves the use of chemicals such as fertilizers and pesticides. It is believed that pesticide residues in citrus fruits are mainly located in the fruit peel which is considered as a protective layer. Essential oils from citrus fruits are used by food, pharmaceuticals, aromatherapy and cosmetic companies. These essential oils are extracted from the citrus peel. Regulations have become increasingly strict on the residual levels of chemicals used for crop treatments because of the impact on public health and the environment. To detect these chemicals researchers have developed liquid/solid phase extraction methods with analysis by GC/MS and or LC/MS. This application note describes a simple and rapid extraction procedure for pesticide residues in lemon essential oils. The method uses QuEChERS extraction and modified dispersive SPE coupled to GC/MS.

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WHAT'S NEW

Determination of sulfate and chloride in denatured ethyl alcohol according to ASTM D 7319

Metrohm

In this paper a convenient direct injection suppressed ion chromatographic method for determining chloride and sulfate in denatured ethanol samples is presented. The described method is the subject of the recent ASTM D 7319 and the results obtained fully comply with ASTM D 4806-06c.

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Analyse More Semivolatiles Samples Per Shift Using Split Injection

Restek

Semivolatiles are typically analysed using splitless injection, but this technique results in slow analysis times and injection-to-injection variability. In contrast, using split injection under the conditions established here allows faster sample throughput and improved repeatability.

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Separation of Pharmaceutically Relevant Analytes

Advanced Chromatography Technologies

This application note demonstrates the separation of a range of 17 pharmaceutically active analytes on a C18 column, a PFP column and an ACE C18-PFP column, under the same chromatographic conditions. The C18 column and the PFP column show different selectivity but both fail to fully separate all 17 analytes. The ACE C18-PFP however, successfully separates all 17 analytes under the same chromatographic conditions that proved unsuitable for the C18 and PFP columns.

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Faster Real-time Response to Bacterial Infection of Bioethanol Fermentation using a Short Rezex ROA Column

Phenomenex

Today, many ethanol producers are looking for ways to reduce cost and improve operational efficiency. A quick and easy way to achieve this is by using the shorter Rezex ROA 150 x 7.8 mm column as an alternative to a longer 300 x 7.8 mm column. The shorter column will not only increase throughput by 50%, but also reduce cost by utilizing less solvent for each HPLC run.

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Analysis of Water-Soluble Polymers Using Linear Size Exclusion HPLC Columns and a Semi-Micro SEC System

Tosoh

The molecular weight distribution of polymers is usually characterized by size exclusion chromatography (SEC) coupled with refractive index, viscometric or laser light scattering detection. Recent advances in SEC comprise semi-micro SEC and the design of linear columns providing wide molecular weight separation ranges and near-linear calibrations. We describe the separation of water-soluble polymers with a new generation of linear, polymer-based SEC columns using the compact EcoSEC SEC system.

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Comprehensive analysis of crude oil by two-dimensional GC (GCxGC) and time-of-flight (TOF) MS

ALMSCO

Within the complexity of crude oil, the compounds of most interest to the petroleum industry are relatively volatile (boiling points generally below 400 °C) and non-polar, therefore separations are predominantly performed by GC with a non-polar column. The resulting chromatograms are highly convoluted and usually characterized by a matrix of unresolved material that appears as a significant background "hump" beneath the partially resolved non-polar compound peaks.

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